TRANSPORTATION PLANNING FOR SAN FRANCISCO

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A report on the planning procedure and planning and engineering techniques utilized in preparation of the San Francisco long-range circulation plan, 1946-1948

Graduate Student Problem

The Department of City and Regional Planning

University of California at Berkeley

April 1950

April 22, 1950

Graduate Student Group
Department of City and Regional Planning
University of California
Berkeley 4, Calif.

Gentlemen:

This report attempts to give a description and analysis of the planning procedures and planning and engineering techniques utilized in the preparation of the San Francisco Long Range Circulation Plan.

It is one of the city planning problems given to graduate students in C. P. 212, under the direction of Professor Kent, Director of the Department of City and Regional Planning.

We are especially indebted to the following persons for the information which they gave us to make this report possible: T. J. Kent, Jr., former Director of Planning; James R. McCarthy, Associate City Planner; Sydney Williams, Senior City Planner; William Spangle, City Planning Consultant; and Roy S. Cameron, city planning graduate student.

Submitted by:

Charles R. Dunnan

Norman Murdoch

Arthur Spencer
Chairman

INTRODUCTION

The Problem As Given

On March 27, 1950, the following city planning problem was given to Charles R. Dunnan, Norman Murdoch, and Arthur Spencer, by Professor Kent.

Subject: Analysis of (1) planning procedure and (2) planning and engineering techniques utilized in preparation of the San Francisco long range circulation plan.

Introduction: In 1949 the San Francisco Department of City Planning brought to completion a two year transportation planning job that was unusual in many respects. It was concerned with the movement of goods and persons by every means of transportation; it was concerned with immediate needs as well as the long range needs of the future; it was consciously and carefully related to a long range land use plan; it was carried out essentially by a permanent civil service staff representing all interested city departments headed by the Director of Planning; and its findings and recommendations had a direct influence on the $50,000,000 transportation improvement program carried out in 1948 and 1949.

Analysis of (1) planning procedures and (2) planning and engineering techniques: Your job is to describe and analyse the planning procedures followed by those who provided the leadership in instituting and carrying out the job. You are to describe and analyse the planning and engineering techniques used in preparing the long range land use plan, the long range trafficways plan and the long range transit plan. In addition you must describe the different staff organizations that were evolved to meet changing conditions, political and otherwise, during the two-year period.

You are to prepare the report for presentation to the city planning graduate student group. You will use charts, maps, and diagrams which do not have to be reproduced, and you will prepare a supplementary text that can be reproduced.

Procedure and Due Date: Designate your own chairman and outline the work program during the first week. Fifteen copies of the supplementary text and the original charts are to be completed by 9:00 A.M., on Saturday, April 22, 1950.

Initial Analysis

Immediately after the problem was issued the students realized that they were really being asked to write two separate reports--1) administrative organization and procedures; and 2)

long range land-use, trafficways, and transit plan planning and engineering techniques.

We are grateful to the San Francisco Department of City Planning for much of the material and plates which appear in this report.

CONTENTS

THE HISTORY OF CIRCULATION IN SAN FRANCISCO

Introduction

The circulation pattern of San Francisco from before the Gold Rush to the early, post-war period has been characterized by increasing congestion and confusion and general lack of the use of good planning principles.

Attempts have been made periodically by various civic and political organizations to pave the way for improved facilities. Several engineering and planning consultants have been employed to make transit and trafficway plans, but few proposals were ever adhered to.

Until 1848, no comprehensive long-range transportation plan was ever completed for San Francisco. Earlier plans concerned themselves with particular phases of transportation, but no concern was given to overall correlation of transportation with a land use plan.

The First Survey

In 1839, the governor of California, Don Juan B. Alvarado, ordered the alcalde of San Francisco, Francisco de Haro, to conduct a survey of the plain and cove of Yerba Buena. The alcalde commissioned a Swiss sailor and surveyor, Jean J. Vioget, to survey the area which was bounded by Pacific and California Streets and Montgomery and Dupont Streets. (later Grant Ave.) Peculiar to this survey was the fact that the intersections were at 2½ degrees from right angles, but very soon afterwards the plan was corrected to exact perpendicular intersections, lots being changed to fit the new conditions.

U. S. Flag Raised

By 1846, when the United States flag was raised and Yerba Buena took on the name of San Francisco, the population had grown to approximately 150 persons, with 23 buildings, mostly shanties, in the surveyed area.

First Official Map

In 1847, an official map of the town was authorized by Lt. Washington A. Bartlett, U. S. N., the first American alcalde of San Francisco. The area encompassed was between Sutter and Vallejo Streets and Powell and Battery Streets.

On Mar. 10, 1847, an order was given renouncing all title

to the federal government to beach and waterfront properties. Soon afterwards, Jasper O'Farrell was authorized to make a complete survey and street plan of the town site extended to beach and water property. The work of filling in the cove was started immediately but was not completed until some years later.

The Rectangular Street Pattern

In 1850, San Francisco was chartered a city. Due to the great influx of gold seekers, the population had grown to almost 25,000. Jasper O'Farrell was authorized as city surveyor, and blocks were layed out, bounded by Post, Leavenworth, and Francisco Streets.

With the exception of Market Street which was placed in a direct line from the Twin Peaks to the waterfront, all other streets conformed with the rectangular pattern of the Vioget or first survey. In spite of the rugged topography, with few exceptions, all latter attempts to deviate from this pattern were unsuccessful.

Local Transit and Urban Growth

The development of local transit facilities may be used as a good criteria for urban growth, although some lines carrying passengers to public areas were built long before growth along them took place.

Industrial and shipping services were started before the dawn of transit, and these services were extended throughout most of the eastern waterfront areas until the present.

I. Beginnings of Transportation 1850--1860

This period, often refered to as the omnibus or stagecoach era, linked the central area, mentioned earlier in O'Farrell's surveys, with the Mission Dolores. Two plank roads on Mission and Folsom Streets were laid out for the service.

II. The Horse Car Period 1860--1873

Although a stagecoach line connected the Presidio with the downtown district before 1860, it was not until after this period that transit extended urban growth west as far as Presidio Ave., north of Market Street.

A horse car line was built from the waterfront on Market Street, down Valencia Ave., passed the Mission Dolores, to Twenty-fifth Street. Other lines ran parallel to this route, on the south and east, and this area saw extensive growth.

III. Cable Railway Period 1873--1891

Up until this time the summits of the city's downtown hills were considered as dreary waste lands. With the invention of the cable railway, by Andrew S. Hallidie, the means was provided to conquer previously inaccessible grades. The real estate boom was on, and hilltops were no longer devoid of population.

Little extension of growth took place beyond the eastern end of Golden Gate Park, but higher densities arose in previously urbanized areas.

IV. Electrification and Consolidation 1891--1912

The dawn of the street car in San Francisco, as a much faster means of travel, made possible the extension of urban growth along main arteries in many sectors of the city. Urbanization was principally extended to the beach, on the north side of Golden Gate Park and southward between San Jose Ave. and Mission Street.

Following the new city charter of 1900, which provided for ultimate municipal ownership of intra-city transit and forbade the granting of exclusive franchises, new lines failed to appear. Lines already in operation tended toward consolidation.

V. Municipal Operation and Expansion 1912--1948

With the exception of a few extremely hilly areas, including those in the vicinity of Mt. Sutro and the Twin Peaks, local transit encouraged growth throughout most of San Francisco. Although the Twin Peaks and Sunset Tunnels were proposed much earlier, work was not completed on them until 1925.

The first city owned car began regular service on Geary Street, on Dec. 29, 1912, but final municipal ownership of all local transit, with the exception of the California Street Cable, did not take place until 1944.

Planning Efforts

Mention has already been made of the attempt by various civic and political groups to encourage the use of transit and trafficway planning. The history of circulation would be incomplete without description of at least two of these organizations, their procedures, and highlights of the plans.

Plans and reports reviewed for this study included those of Burnham, Arnold, McClintock, and Bartholomew. O'Shaughnessy and Tilden also made plans. Space does not permit us to discuss each plan, but brief excerpts from the Burnham and Arnold reports will give us a general picture of what civic minded people were considering to improve the environment of San Francisco.

I. Report on a Plan for San Francisco by Daniel H. Burnham, Sept., 1905

Burnham was brought to San Francisco through the Association for Improvement and Adornment of San Francisco, a civic group formed in Jan., 1904.

"The main objects of the association are to promote in every way the beautifying of the streets, public buildings, parks, squares, and places of San Francisco; to bring to the attention of the officials and the people of the city the best methods for instituting artistic municipal betterments; to stimulate the sentiment of civic pride in the improvement and care of private property; to suggest quasi-public enterprises; and in short to make San Francisco a more agreeable city in which to live. Finally, to discover and indicate the ways and means by which all these results may be best attained."

"The rectangular plan of streets of San Francisco has rendered intercommunication difficult, more especially where the grades are very steep, as is often the case. To overcome this difficulty of moving from center to center, diagonal streets should be cut in many places and certain streets should be widened, extended, and regraded."

Burnham also suggested subways under these diagonal routes.

II. Report on Transportation Facilities--City of San Francisco by Bion J. Arnold, Mar. 1913

Under a city resolution #8725, Arnold was retained to "advise the Board of Supervisors as to what action it should take in order to improve the transportation facilities of this city".

"Several factors contributing very greatly to the difficulties in providing proper transportation for San Francisco are directly traceable to the city plan.

1. "The unfortunate rectangular street layout completely ignored the contours and hillside plan of D. H. Burnham and others.

2 "The angular position of the streets north of Market Street permits no supplemental thoroughfares parallel to Market Street to which some of the traffic thereon may be conveniently divided.

3. "Roadways north of Market Street are just to narrow to permit efficient vehicle traffic in addition to street cars, i.e. two lines of vehicles in either direction.

4. "The use of 25 foot lots encourages concentration and ultimate congestion by the use of very narrow buildings."

A list of the major recommendations contained in the report follows:

1. Car and traffic tunnels for the Western Addition

should be built.

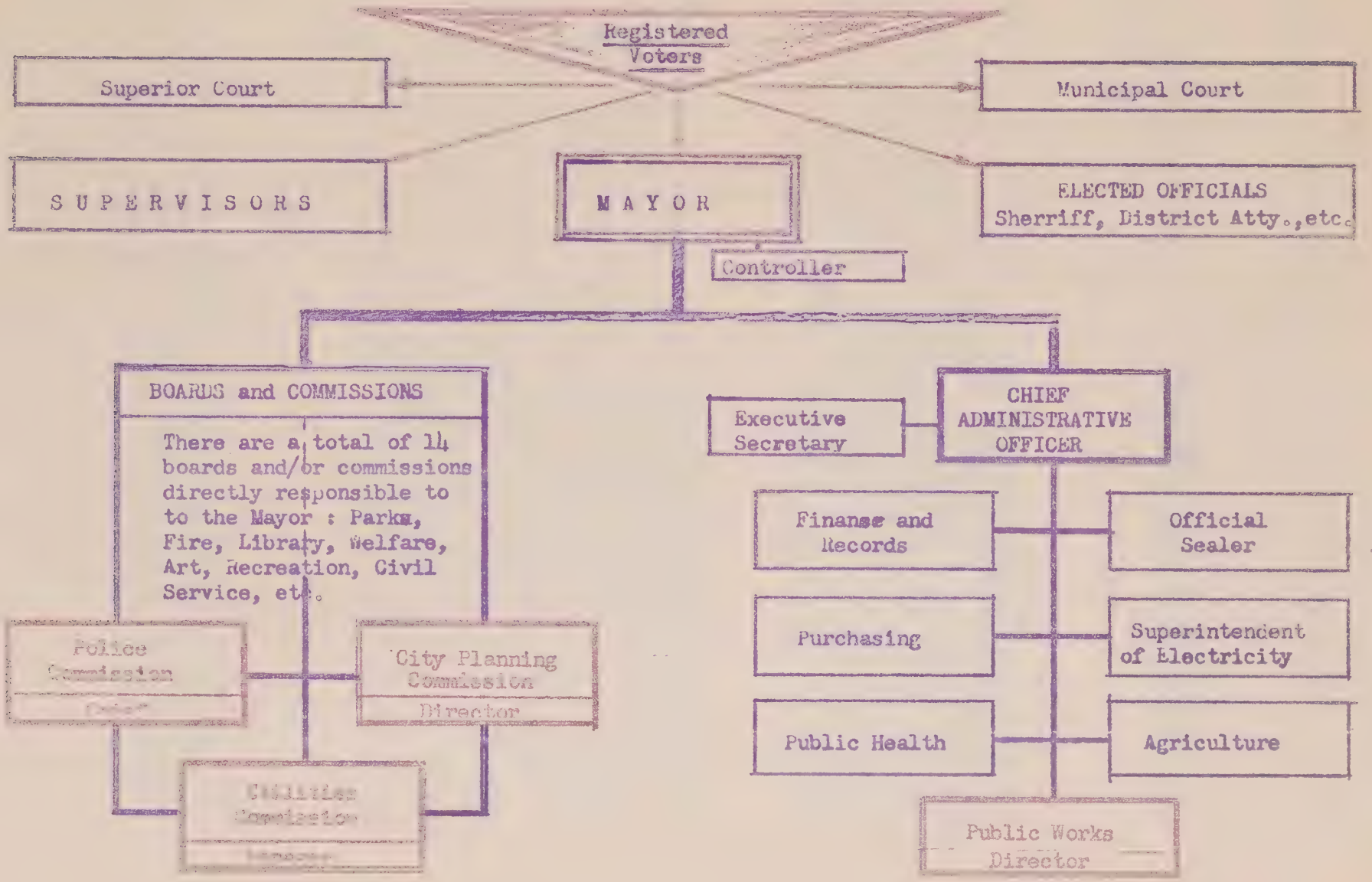
2. Market Street should be extended with a rapid transit tunnel for suburban and interurban service.

3. The Mission-Sunset tunnel from Market Street should be extended to Pope Valley and upper Sunset.

4. Market Street should have a subway connecting with the Twin Peaks tunnel.

PART I

SAN FRANCISCO CONSOLIDATED CITY AND COUNTY GOVERNMENT
(Generalized)
1945



Source: S.F. Bureau of Governmental Research (modified)

Page Number One

ADMINISTRATIVE ORGANIZATION, POLICIES AND PROCEDURES

1940

The Planning Commission, under Mayor Rossi, employed a staff of 3 members which could do little more than process routine zoning matters.

1941

Urged by various civic organizations, the Board of Supervisors increased the Planning Commission's budget from $15,315 for the previous year to $38,642. This enabled the Commission to employ Ernest Goodrich, a New York traffic engineer and consultant city planner, on a part time basis. The staff was increased to seven members. For the first time, planning assumed a position of importance in San Francisco. Traffic studies were made, one of the results being the present one-way street plan. Traffic planning became identified with city planning.

1942

The Board of Supervisors approved the one-way street plan, and a budget of $87,897. The Commission increased the staff to sixteen members, employed Mr. L. Deming Tilton as full-time director, and began work on the preparation of a Master Plan. During the following three years, many planning studies were made, including land use and circulation. One of the most significant studies begun in 1942 was the Shoreline Development Plan. Tilton was opposed to the State Highway Commission's plan on the location of the extension of the Bayshore Highway. He waged a single-handed battle with this body, holding to the opinion that the major route should be along the Embarcadero. At this time the Department of Public Works was in complete accord with the State Highway Commission, believing that they were better qualified to make the correct decisions.

1943

The Commission published its first technical report, the Preliminary Report on Shoreline Development which included the proposal of a 23-mile continuous shore drive. Studies on land use, population, housing and redevelopment and public works heightened general interest in the Commission's activities.

1944

Mayor Lapham assumed office. The people of San Francisco voted to consolidate the municipal railways, acquiring the Market Street Railway. After this successful bond issue, Mayor Lapham announced that he would not leave office without the people having the opportunity of voting to improve equipment on the transit system. The City Planning Commission began to assume its proper role of research and coordinating agency. At the request of the Mayor it prepared a 6-year Capital Improvements Program totaling $131,000,000.

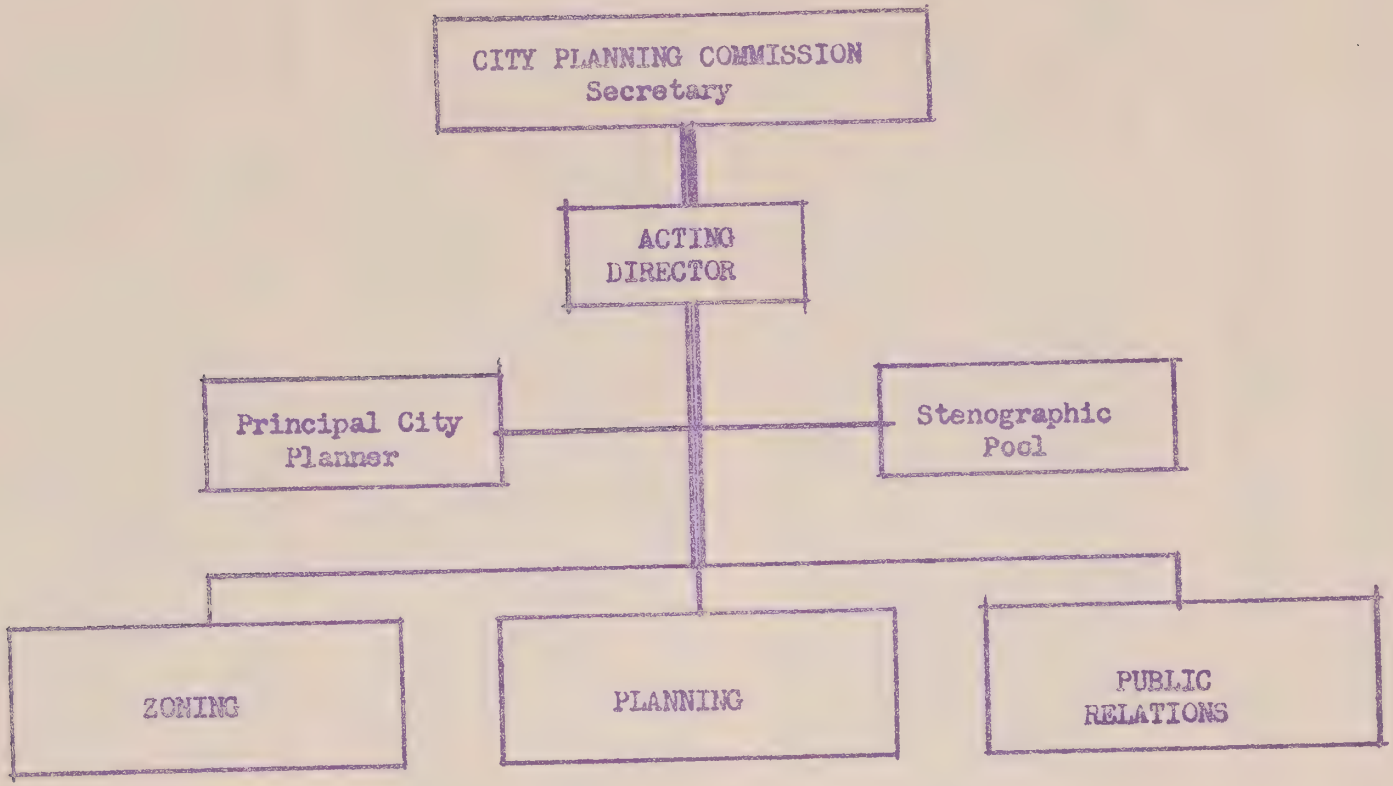
1945

The Staff was increased to 20 members and a budget of $94,475 was approved. During the first part of the year, at the request of Tilton, the Commission hired the firm of Woodruff and Sampson, San Francisco structural engineers, to prepare the Embarcadero Freeway Plan. With the State Redevelopment act being discussed, the Planning Commission realized the need for preparation of a Master Plan which would comply with the act. In the summer work was begun on the framework of the Master Plan. It was divided into three sections, with Tilton and the staff working on the first two, land use and redevelopment. The Commission again employed the firm of Woodruff and Sampson to do the work on the third section which dealt with transportation. In three months these consultants prepared what is still the official framework of the Transportation Section of the Master Plan. Because of the lack of time this plan was premature and necessarily incomplete in many respects. It recommended a survey of the Market Street problem, investigation of former proposals, and study of all factors connected with traffic and transportation problems. The Commission officially adopted the three sections of the plan in compliance with the Community Redevelopment Act.

1946

The importance of the City Planning Commission in the local government administration grew, and the work load increased along with staff size and a budget of $100,245. Misunderstandings had developed between Tilton and Mayor Lapham and other members of the local government administration. On August 15 following Tilton's resignation the Commission requested Mr. T. J. Kent, Jr., who had recently returned to the staff as Associate City Planner after an absence of military service "to be placed in charge of planning." Two days later it was publicly announced that a staff change in the planning director's position was being made. Before accepting the assignment Kent required that the Commission read into the record the following points.

San Francisco Department of City Planning
INTERIM PERIOD ORGANIZATION
August, 1946 to January, 1947



Source: T.J. Kent, Jr.

Chart Number Two

1. That Kent should have full administrative authority and have charge of all affairs of the department insofar as this is possible under the charter.

2. That the work of the Department of City Planning is to be directed by a full-time, qualified professional planner and that such a person shall be found and employed in the shortest possible time.

3. That it will be one of the major responsibilities of the Acting Director to assist the Commission in the search for a new Director.

Rapid progress was made in setting up an effective staff organization (see Chart II) and because of the fine abilities of its members a strong technical and administrative staff began functioning. During the coming months effective operation of the department was also greatly facilitated through the excellent support of the commission appointed by Mayor Lapham. Top members of the staff prepared a panel of possible new directors which was submitted to the Commission for consideration. During the interim period, Kent attempted to put off major policy decisions in order that they could be acted upon after the arrival of a new director. Unknown to him at this time was the fact that most of the Commission members were considering him for the position of Director.

Along with the Board of Supervisors passing resolutions expressing rather general suggestions and pleas for relief of traffic and transportation through an over-all plan, it was becoming apparent that the Mayor was going to push his program for improving equipment on the transit system. The staff was concerned about any proposal for a bond issue that was not based on a coordinated and comprehensive long range plan. The staff wisely believed that any program for transit improvements should be related to the programs of various city departments which handled traffic and transportation programs, and that the present issue should be coordinated with the Master Plan.

Realizing the great importance of establishing a close working relationship with other key departments directly concerned with the city's physical development, the Acting Director took the initiative in September for developing a joint study with the Department of Public Works. The two departments collaborated on a report to the California Division of Highways and the Joint Army-Navy Board on new streets and approaches that would be needed in connection with a second bay crossing. This study, which was completed in December, was significant to the Department of City Planning for several reasons:

1) The Acting Director came to know Mr. Harry Vensano,

Director of Public Works, and was able to acquaint him with planning objectives for the first time. Vanzanno was basically cooperative even though his background and position could not warrant unqualified agreement at all times with planning concepts.

2) The planning staff became familiar with the engineering staff of the Department of Public Works, and came to realize that this department had no one equipped to prepare programs according to planning concepts.

Early in Nov., 1946, in accordance with his 1943 election platform, Mayor Lapham announced publicly that he was seeking a $20,000,000 bond issue program for the spring ballot. Under his own initiative and with the approval of the Acting Director, James R. McCarthy, Associate City Planner, conceived and executed a report for the City Planning Commission entitled "Planning for Planning: The Transportation Problem". This report was directed to the Mayor and recommended a program for bond issue coordination and for the development of a complete transportation section of the Master Plan. During three weeks following the completion of the report the staff weighted the importance of taking a definite stand on the issue against the wisdom of forcing decisions on such important policy matters prior to the appointment of a Director.

The report was prepared in two parts, Part I dealing with a plan for bond issue coordination, and Part II on a plan for the development of a complete transportation master plan. Part I recommended that the Mayor act immediately to:

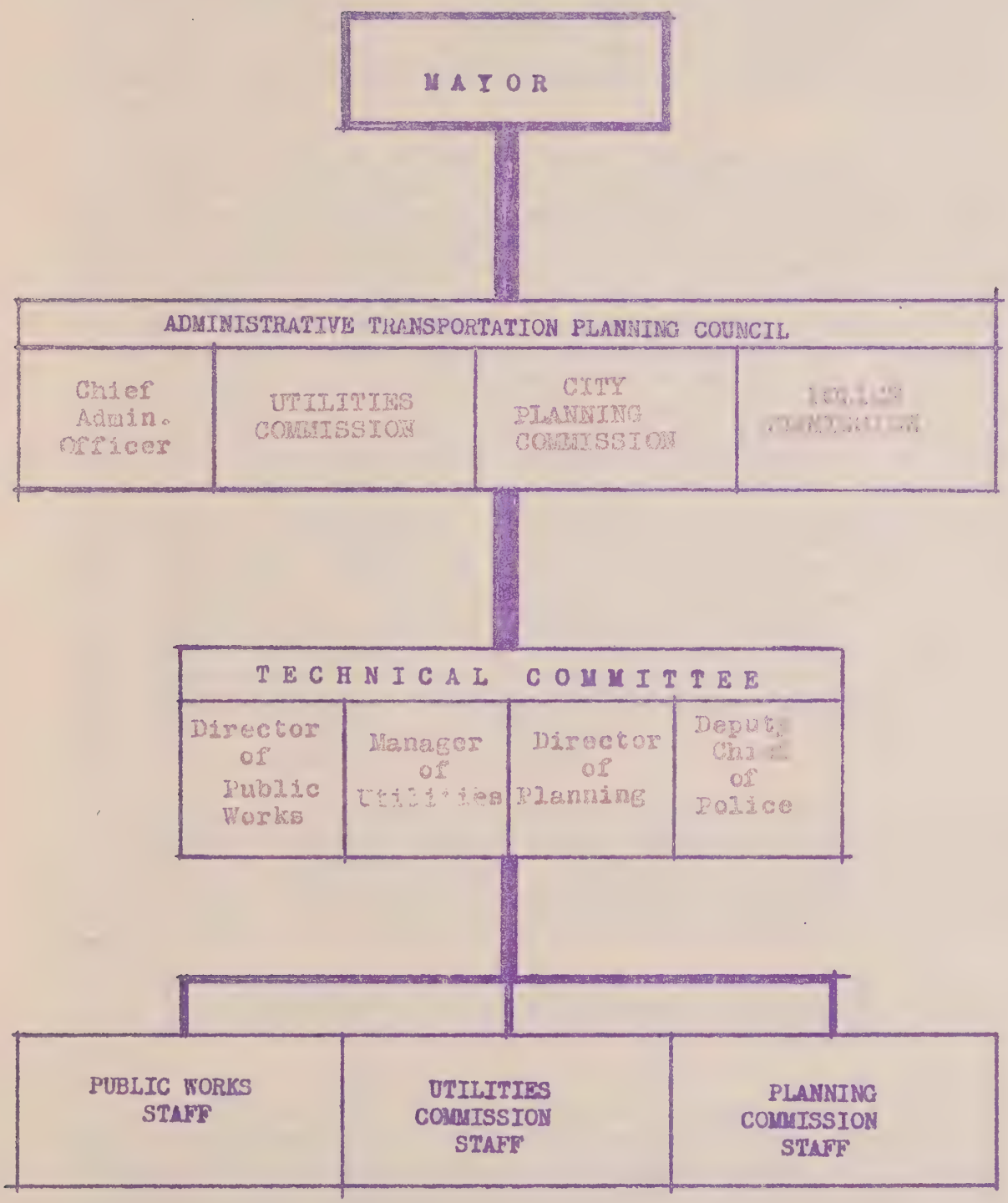
1. "Establish an Administrative Transportation Planning Council composed of the Chief Administrative Officer, the Public Utilities Commission, and the City Planning Commission. (See Chart III)

"The members of the Council should be charged with the responsibility of directing their respective department heads to consider jointly, as a Technical Committee, the projects tentatively listed for inclusion in the bond issue program and to submit to them, as a council, for transmission to the Mayor, a coordinated program of capital improvements to be included in the proposed bond issue.

2. "Direct the Administrative Council to establish immediately the three-man Technical Committee (consisting of the Director of Public Works, the Manager of Utilities, and the Director of Planning) and to give the Committee sufficient authority to reach common decisions on technical matters for the express purpose of enabling it to formulate a unified and coordinated program of capital improvements for submission to the Council."

The Committee's task would essentially be to consider jointly the transportation for the purpose of unifying and coordinating

Organization for
COORDINATION OF
TRANSPORTATION BOND ISSUES *
December, 1946 to September, 1947



* This organization produced the report: " Traffic, Transit, and Thoroughfare Improvements for San Francisco " (Pink Report).

Source: "Planning for Planning: The Transportation Problem"
San Francisco Dept. of City Planning.

projects, tentatively listed for inclusion on the bond issue program. Members of the Committee would employ members of their own staffs for the necessary staff work.

3. "Instruct the Administrative Council to direct the Technical Committee, after it has completed its work on the immediate bond issue, to continue to study the transportation needs of the City and to prepare a complete, overall, comprehensive city-wide Transportation Master Plan to serve as a guide for future development."

Part II outlined the proposal for the organization which would be set up to prepare the Transportation Master Plan, essentially a continuation on the upper levels of the organization set up for the immediate program with the additional provision of the Police and Park Commissions to sit in with the Committee on specific problems. Another provision was for consultants in planning, transit, traffic and highway engineering who would advise the Technical Committee on overall considerations of basic transportation planning policy. Provison was also made for a distinct Transportation Master Plan staff with a Project Manager, appointed by and responsible to the Technical Committee, whose duties would be to hire and direct the Transportation Master Plan Staff. It was proposed that this staff would consist of persons chosen from sources outside the city government agencies as well as permanent staff members from the City Planning and Public Works Departments and from the departments under the Public Utilities Commission. These local staff members were to be assigned on a full-time basis during preparation of the Plan for purposes of liaison, and to assure the full utilization of the knowledge and skills available in the city departments. It was further proposed that funds be given to the City Planning Commission, as agent for the Council, to finance the project, and that the President of the City Planning Commission would be Chairman of the Council.

It was stated that the Transportation Master Plan "would be undertaken with full consideration of the basic differences in the needs of different types of traffic and would be designed to provide for their varied requirements on a coordinated basis. It would result in a complete and definite circulation plan consisting of:

1. "an adequate system of freeways, including approaches to the second Bay crossing, and off-street parking terminal facilities;

2. "a long range, city-wide mass transit plan including a final determination of the need for and the type and extent of a Market Street subway, and a coordinated design of freeways for transit use with adequate provisions for loading and unloading facilities and a proper integration of such facilities with district and neighborhood requirements; and

3. "plans for optimum use of existing streets by an extension of one-way traffic system, improved traffic signals, better provisions for merchandise deliveries, and extended facilities for pedestrian use."

In summarizing the organization it was stated that "there would be established an organization with definite lines of authority and fixed responsibilities. A full-time special staff under the direction of a Project Manager would develop a Transportation Master Plan, subject to the guidance and final approval of a Technical Committee consisting of the technical heads of the three City Departments most directly concerned. The Technical Committee in turn would be responsible to the Administrative Transportation Planning Council which would approve broad policies and the completed comprehensive Plan. The Administrative Council would be responsible to the Mayor for the Plan. The Mayor, aided and advised by a Citizens' Advisory and Finance Committee (appointed by the Mayor) would then be responsible for submission of the Plan to the Board of Supervisors (for its approval) and the people of San Francisco."

The report concludes with an estimated time schedule of twelve months and a cost of $300,000, although it was stated that these items were flexible, "depending chiefly upon the scope of the planning and design work necessary as determined by the Technical Committee, and the urgency of the need for a decision on particular projects such as the subway."

On Nov. 21, 1946, Acting Director Kent presented Part II of the report to the Planning Commission, and the "selling" job was begun. Because of the confidence he had gained from the Commission, he was able to convince them on the soundness of the principles involved, and they approved the complete report on Dec. 18, without consulting the Mayor. They went on record as supporting only a coordinated bond issue program. The report was submitted to the Mayor's office along with a letter of transmittal from Michel D. Weill, President of the Commission.

On the same day a fortunate incident occurred which brought the Commission's position to the immediate attention of the public. Members of the press had helped themselves to copies of the report as it was being assembled, and they were therefor able to write up the commission's action along with a summary of the recommendations contained in the report.

The following morning the whole city, including the Mayor who had not yet read the report, was greeted with headline banners announcing the Commission's stand. By sheer coincidence, Mayor Lapham walked into the same eating place where Kent was having breakfast and recognized Kent as the Acting Director of the Department of City Planning, although they had not previously met. Since the unfortunate relationship had existed with the former director,

the Mayor had not contacted members of the Planning Staff although he maintained confidence in the Commission he had appointed.

After several hours of explaining the staff's concepts in general and the way they related to the transportation program, Kent was successful in winning the Mayor's confidence and his interest in the proposals. The Mayor then conferred individually with the prospective members of the Technical Committee and Chief Administrative Officer, Brooks. J. H. Turner, Manager of Utilities, and Brooks disapproved the report, doubting that the technical group could achieve the necessary cooperation. However, on Dec. 20, the Mayor informed Kent that he was immediately acting upon the recommendations to form the Administrative Transportation Council and the Technical Committee.

Mayor Lapham contacted the future members of the Technical Committee, informing them that they would receive their instructions from the Council. McCarthy prepared the letter of instructions which was to be read at the first Council meeting, anticipating that a definite stand would have to be taken from the beginning in order to overcome any opposition that Turner might propose on procedural policies. Kent presented this letter to the President of the Planning Commission who read it at the first Council meeting on Dec. 19.

The Technical Committee met the following day, appointing Turner, who had seniority in city employ, as chairman of the group, with Kent as executive officer responsible for coordinating all work. There followed ten days of heated debate which culminated in Turner's accepting and respecting the force of Vensano's and Kent's determination that the project be carried out as proposed. Throughout the ensuing months Turner was opposed to a long-range planning job, which had already been provided for in the Planning Department's tentative budget. Vensano insisted too that none of the members of the Technical Committee inform their commissions of progress on the report until it was ready for release. This was to insure against any hindrances or side-tracking to the flow of work. December 31 was a big day for the Department of City Planning in two respects. Kent was made full Technical Director (See chart IV) and the Committee agreed upon the following policies and procedures:

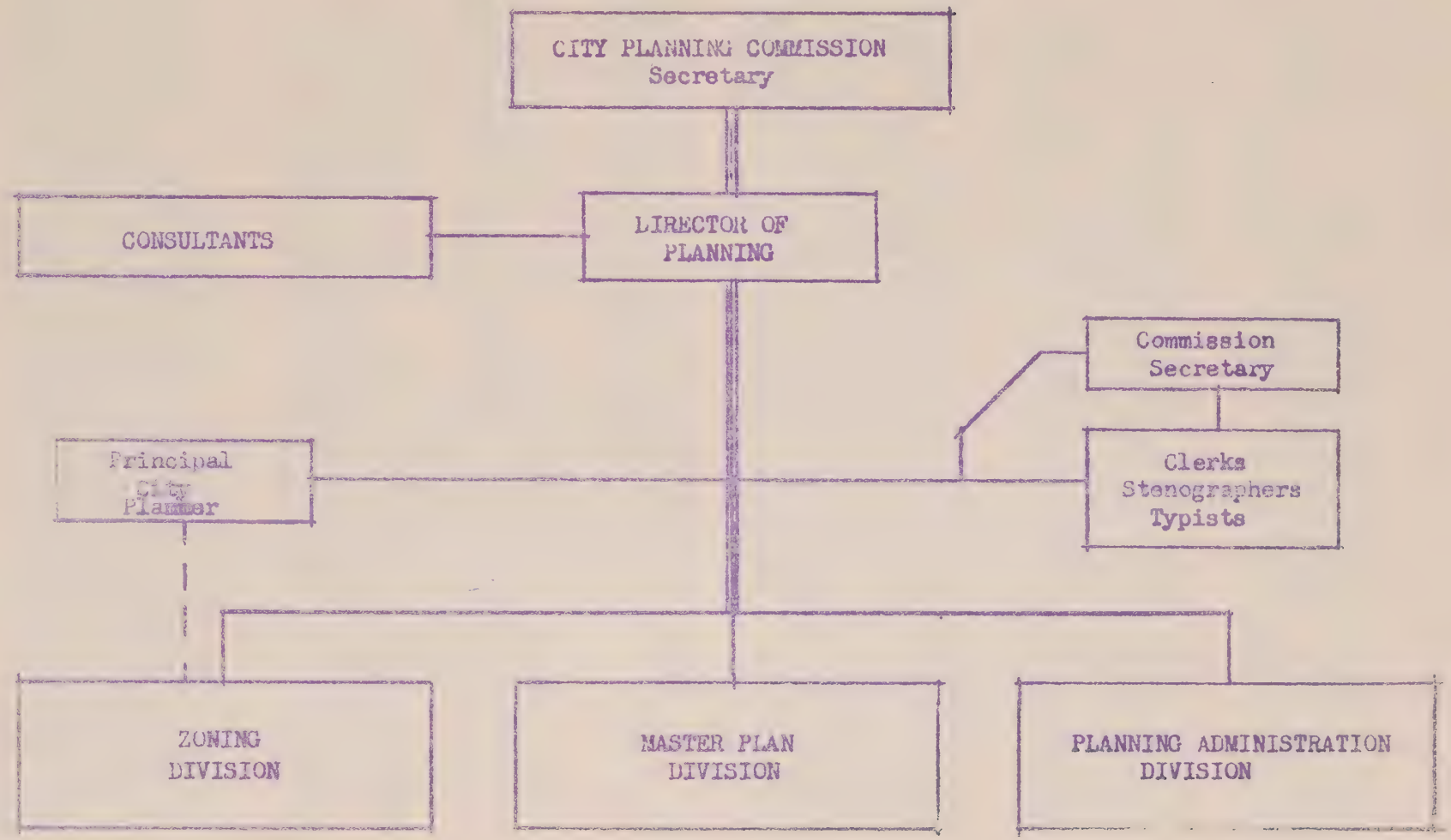
1. "To consider jointly all the transportation projects tentatively proposed for inclusion in the Spring Bond Issues, coordinating each project on its technical merit and in relation to the other projects, to the Master Plan, and to the Newton Transit Plan.

2. "To designate as soon as possible all projects on which there is unanimous agreement among the members of the Technical Committee as to need and type, and to submit them to the ATP Council for further consideration and transmission to the Mayor as a coordinated program of capital improvements having the full

San Francisco Department of City Planning

STAFF ORGANIZATION

Inaugurated: January, 1947



Source: Progress in City Planning
San Francisco Dept. of City Planning

support of all the departments represented by the Committee for inclusion and such in the proposed Spring Bond Issues.

3. "To recommend to the ATP Council for further consideration and transmission to the Mayor subsequent steps for further study of the problems arising as a result of this study. This task will include consideration of the recommendations of the proposal made in Part II of the December 12 report of the City Planning Commission to the Mayor on this subject."

In effect the working procedure was to obtain agreement on basic principles and assumptions. Each member then prepared a program related to his own department's needs. Following this, the Committee took these various plans and coordinated them, selecting projects deemed most worthy of early execution, ironing out all conflicts, and keeping in mind the relationships between immediate and long-range plans.

On Mar. 1, 1947, the product of the Technical Committee's two months study, the report entitled "Traffic, Transit and Thoroughfare Improvements for San Francisco" was released by Turner in the Mayor's office. The report contained recommendations covering sixteen major projects to be included in the bond issue program and an additional recommendation covering the program for completion of the Transportation Plan. It also contained a section on the basic assumptions and principles that were used to guide decisions. The projects could be classified by those;

1. Requiring financing by general obligation bonds
2. Financed with current funds of the departments concerned
3. Requiring legislative action only
4. Requiring public support and execution

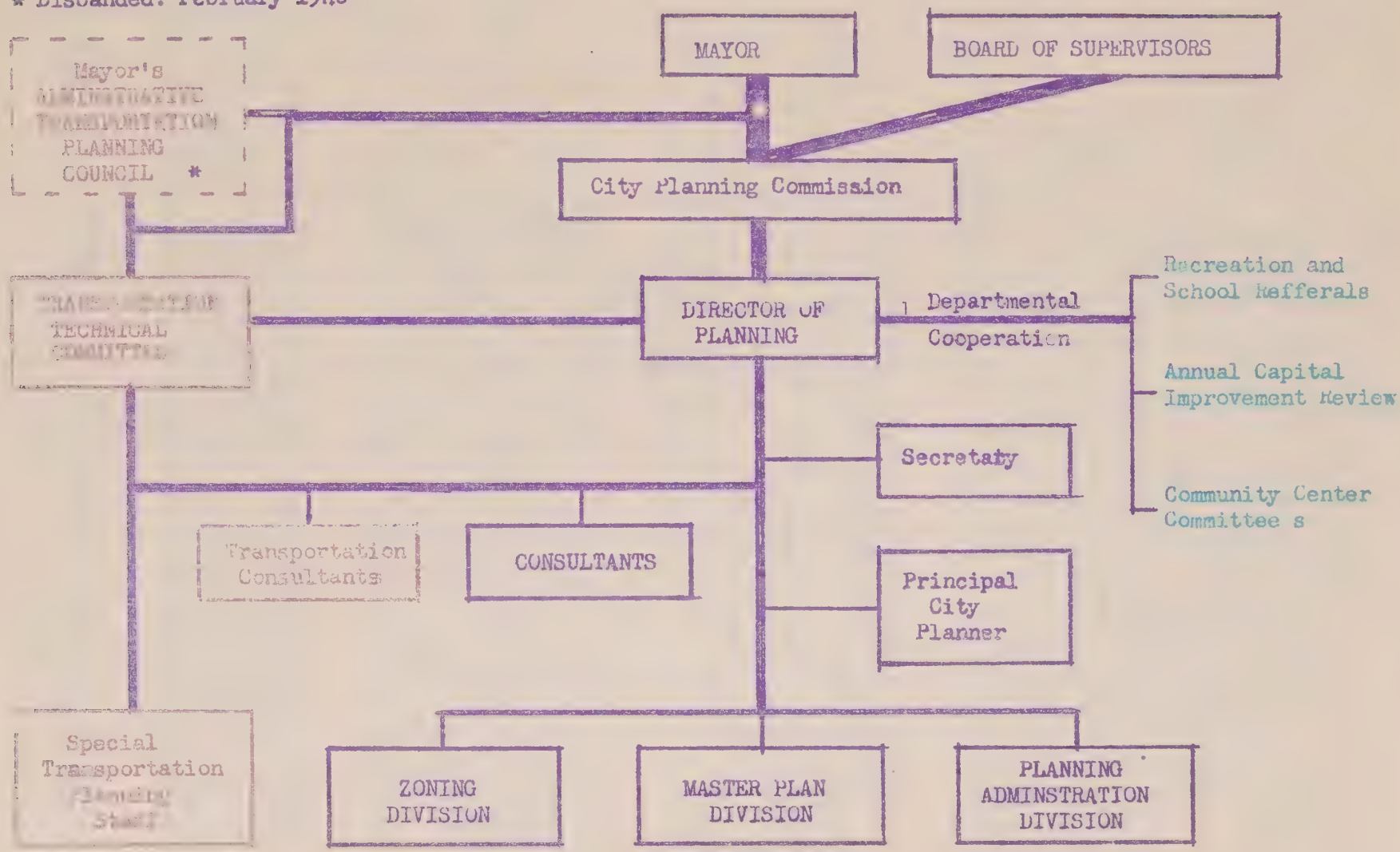
The projects fell into four major categories: major thoroughfare and street construction, transit improvement, traffic alleviation, and miscellaneous, including a recommendation for staggered working hours and improved lighting of streets.

The major thoroughfare plan was a result of an independent study made by the Committee after taking into consideration the existing and probable future traffic conditions including the traffic to be introduced by a second Bay Crossing. It conformed in a large part with the street and highway system embodied in the 1945 Master Plan.

On completion of the above report the Committee recommended "that the Administrative Transportation Planning Council and its Technical Committee be established on a permanent basis and that the Technical Committee be instructed (1) to complete all sections of the comprehensive Transportation Plan, and (2) to coordinate all construction programs affecting transportation. It(was) also recommended that funds be provided in the 1947-48 budget of the City Planning Commission for the employment of consultants in the execu-

San Francisco Department of City Planning
Transportation Planning
FUNCTIONAL ORGANIZATION
Existing January 1948

* Disbanded: February 1948



Source: Progress in City Planning
San Francisco Dept. of City Planning

Number Five

tion of this program." (See Chart V)

The Mayor was upset to find that the program had been expanded to a series of projects totaling $57,000,000; however, he went along with the report, sending it to the Administrative Transportation Planing Council, which read and approved it less than ten days latter. Following a further discussion between the Mayor and Kent and the Planning Commission, the Mayor approved the report and submitted it to the Board of Supervisors. Initially, the Supervisors would have nothing to do with the report. Supervisor Marvin Lewis, its chief opponent insisted that recommendations on the immediate program must be preceded by the development of a long range plan. When it was argued by the members of the Administrative Transportation Council that even though further study of long range need might alter some of the proposals the general work involved would remain the same, the report began to receive the support of the Supervisors, and the Planning Commission prepared presentations for the Board.

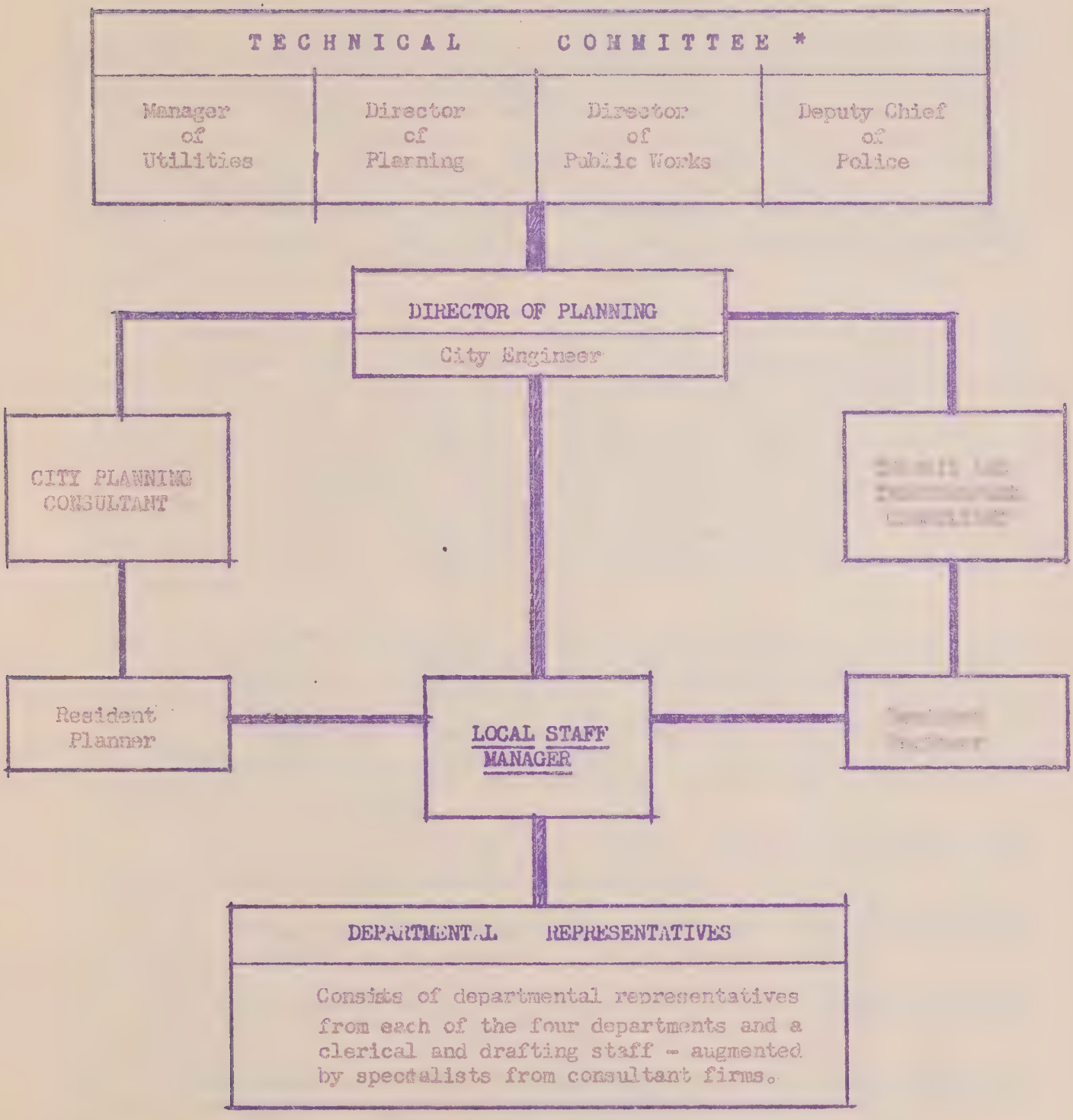
In May, the Supervisors approved the Department's budget, including the $200,000 item for the long range transportation planning program. Prior to this, the Department contacted Charles E. DeLeuw on the possibility of his being able to give his services as transportation consultant on the long range study. DeLeuw had been recommended to the Department by Ladislas Segoe, City Planning Consultant to the Department in 1947. Segoe had been working with the staff on land use studies. DeLeuw recommended that there be two consultants, one engineer and one planner. He, in turn, recommended that Segoe be the planning consultant.

Since there was not sufficient time to put the immediate bond issue program on the spring ballot, and in order to gain even greater confidence from the Board, the Mayor appointed a seven man citizens' advisory committee to review the immediate program. This committee met twice a week with the Technical Committee for four weeks, after which time all proposals were approved with the exception of the Portola highway. The recommendations were submitted again to the Board of Supervisors. After deleting the Portola Highway project, which reduced the program to $50,050,000, the Board passed on it, Lewis being the only dissenter, and placed it on the November ballot.

In July, 1947, the Director of the Department of City Planning recommended to the Technical Committee a draft of the program for the $200,000 long-range transportation planning job prepared by the planning staff. This program was approved on Sept. 12, by the Technical Committee and the Controller. It was then prepared in final form for submission to and approval of the ATP Council and the Mayor.

The program was divided into three parts; elements of the problem, organization for carrying out the job, (See Chart VI) and

Staff Organization for
COMPLETION OF COMPREHENSIVE TRANSPORTATION PLAN
September, 1947 to May, 1948



* Technical Committee to prepare plan for submission to ATP Council and, finally, to City Planning Commission for consideration and adoption as Transportation Section of Master Plan.

Source: "The Program for the $200,000 Transportation Planning Job." San Francisco Dept. of City Planning.

a report on the consultants and cost estimates. It is stated that "the development and formulation of the plan will be locally initiated and guided. The Technical Committee carrying the responsibility for setting up the problems to be analyzed, and for developing the final overall plan on the basis of conclusions reached in the study and analysis of the various phases of the transportation problem... Direction of the consultants, their resident representatives, and the local staff in the prosecution of the program will be vested in the Technical Committee." The report states that final recommendations embodied in the comprehensive plan will be those of the Committee. The final report "will consist of 1) a comprehensive long-range transportation plan, which the City Planning Commission will consider for adoption as the Transportation Section of the Master Plan of San Francisco, and 2) a program setting forth the stages of construction which the Technical Committee recommends for putting the plan into effect on the basis of priority of need.

"Consultants (will be) responsible to the Technical Committee, will be hired with funds from the special appropriation for this study to consider advice on 1) the scope of the job and the program for carrying it out, 2) various specific phases of the total problem requiring specialist knowledge and techniques, and 3) the coordination and development of the final comprehensive plan prepared by the Committee. There will be two principal consultants: one a transit and thoroughfare expert, the other a city planning consultant. Both will have resident representatives. The principal consultants may recommend the employment of additional consultants."

"Administrative direction and control for the Technical Committee will be the responsibility of the Director of Planning and the City Engineer. The Director of Planning, as member of the Technical Committee, will be solely responsible for preparing the Technical Committee directives and, with the City Engineer, will be responsible for putting them into effect. Among the principal functions of the Director of Planning and the City Engineer, in this capacity, will be:

1. "to develop an outline of the job and a work program for consideration by the Technical Committee

2. "to advise and assist the consultants and their resident representatives

3. "to direct the work of the local staff through the local staff manager.

"The local staff will be headed by a local staff manager. The principal functions of this staff will be:

1. "to work with the resident representatives and present the local departmental points of view to them

2. "to supply data or direct the procurement of data for the

resident representatives

3. "to develop the final coordinated and comprehensive plan with advice of the consultants and their resident representatives under the direction of the Director of Planning and the Commission, for consideration by the Technical Committee

4. "to prepare maps and charts for the consultants' preliminary reports and for the Technical Committee's three reports

5. to process the reproduction of reports.

"The local staff will consist of departmental representatives designated from each of the four departments represented on the Technical Committee. In addition, there will be a clerical and drafting staff drawn from departmental personnel on an as-needed basis. The temporary employment of technicians to supplement the staff may be recommended in the course of the job, if necessary.

In September the president of the City Planning Commission presented the program to the ATP Council and the Mayor. The program was approved and submitted to and approved by the Board of Supervisors.

During the summer of 1947, the City Planning Commission, at the request of the Mayor conducted a campaign for the November bond issue on the immediate transportation program. The campaign included speaking engagements by members of the Technical Committee before various civic groups, a special issue of the Commission's bulletin which explained to the people the plan upon which the bond issue program was based, and a special exhibit in the Commission's exhibition gallery and later moved to the lobby of the City Hall.

In October, the Commission, acting on the recommendation of the Director of Planning, approved the contracts which had been drawn up for DeLeuw and Segoe. Preparation had already been made for the transportation planning staff's office in the same building with the Department of City Planning, and work was begun immediately, but resident representatives for the two consultants began work, and McCarthy took over as Local Staff Manager, directing a staff varying in size between 10 and 100 members and averaging 25. Within two weeks the Cordon Count had been taken. Within the following months work progressed on an inventory of on-street and off-street parking, traffic and transit volume counts, analysis of O and D data, and various other studies.

In Nov. 1947, the voters approved the $50,050,000 transportation bonds by large majorities, making it possible to carry out the immediate program. On the same ballot the voters approved a charter amendment on the Department of City Planning and they also elected a new mayor, Elmer E. Robinson.

During December, the Technical Committee's first report in connection with the long range planning job was published, "Cordon Count Data, San Francisco Metropolitan Traffic District."

When Mayor Robinson assumed office in Jan., 1948, he dismissed the Planning Commission that had been appointed by Mayor Lapham and appointed five new members. The Mayor also abolished the ATP Council and attempted unsuccessfully to cut off DeLeuw's contract. Vensano insisted the Kent assume full responsibility for seeing that the work of the Technical Committee would be carried through to completion. The Technical Committee continued to exist through momentum for some weeks, but eventually disbanded early in the spring of 1948, and the major part of the plan was completed by the Department of City Planning in conjunction with DeLeuw and Segoe. In June, prior to completion of the long-range plan, Kent resigned as Director of the Planning Department in order to establish the Department of City Planning, at the University of California. McCarthy became Acting Director and was largely responsible for keeping the study moving under the difficult circumstances of working with a new Commission and working without the close cooperation of other departments which had been enabled through the former ATP Council and the Technical Committee.

In Nov., 1948, the report on the long-range plan was published under the title of "Transportation Plan for San Francisco" and was designated by the President of the City Planning Commission "to serve as the basis for the expansion of the transportation section of the Master Plan which will be prepared, considered, and adopted by the City Planning Commission during the coming year."

The report essentially follows the pattern proposed when the program was first being established, with sections on basic data, assumptions and principles, traffic and transportation surveys that were conducted, proposals on trafficways, the local transit plan, Bay Area transportation--San Francisco terminals, improved traffic control, the parking program, and traffic engineering improvements

Bay Area Airport Planning

In setting up the program for the long range transportation planning job, it was recommended by the City Planning Commission that all of the various types of interregional transportation should be studied as they might effect San Francisco's transportation facilities. This included the location of airport facilities. T. J. Kent, Jr., Director of Planning, was instrumental in organizing the planning program, and in pointing out the need for such a study being conducted on a regional basis. The study area was defined as the nine Bay Area counties.

In May 1948 Mayor Robinson requested the Bay Area Council

and the Bay Area Aviation Committee to appoint an advisory technical committee to work with the Department of City Planning in the preparation of a report. Part of the $200,000 fund for the long range study was utilized by the Department of City Planning to provide technical staff assistance.

The technical committee, named the Bay Area Airport Planning Group, was composed of nine members representing various cities and the nine counties as well as private aviation interests. James R. McCarthy was appointed Group Chairman. Many advisors participated in offering technical information. The technical staff was furnished by both the San Francisco Department of City Planning and the Department of City and Regional Planning of the University of California.

Recommendations contained in the report were made after study of the recent documents pertaining to airport planning in the Bay Area. Extensive use was made of the plans proposed by the various counties and by the California Aeronautics Commission. The several county airport plans were coordinated by the Group into a comprehensive Bay Area general airport plan based on aviation requirements of the Area through 1960 and integrated with the Area transportation and land use plans.

The resulting report, entitled "Airport Plan for the San Francisco Bay Area," was published in July 1949. It was submitted to the Bay Area Council and the Bay Area Aviation Committee for approval and for their aid in gaining acceptance by the private and governmental Bay Area organizations concerned.

Transportation Planning Objectives

The significant objectives of transportation planning as they relate to the Master City Plan (thus: the land-use plan) are as follows:

1. To clearly define and separate the living areas from the working areas which are mutually incompatible and require different standards of services and facilities, including transportation and traffic facilities.

2. To provide transportation routes interconnecting the living areas and working areas with the least possible inconvenience or detriment to both.

3. To develop stable attractive residential communities and neighborhoods with their own schools, playgrounds, shopping centers, and free from extraneous traffic movements, especially commercial movements.

4. To make the transportation facilities aid in promoting desirable trends of growth or changes in land use and in discouraging undesirable trends.

5. To so locate transportation facilities so as to preserve good residential areas, but help in eliminating and redeveloping blighted areas.

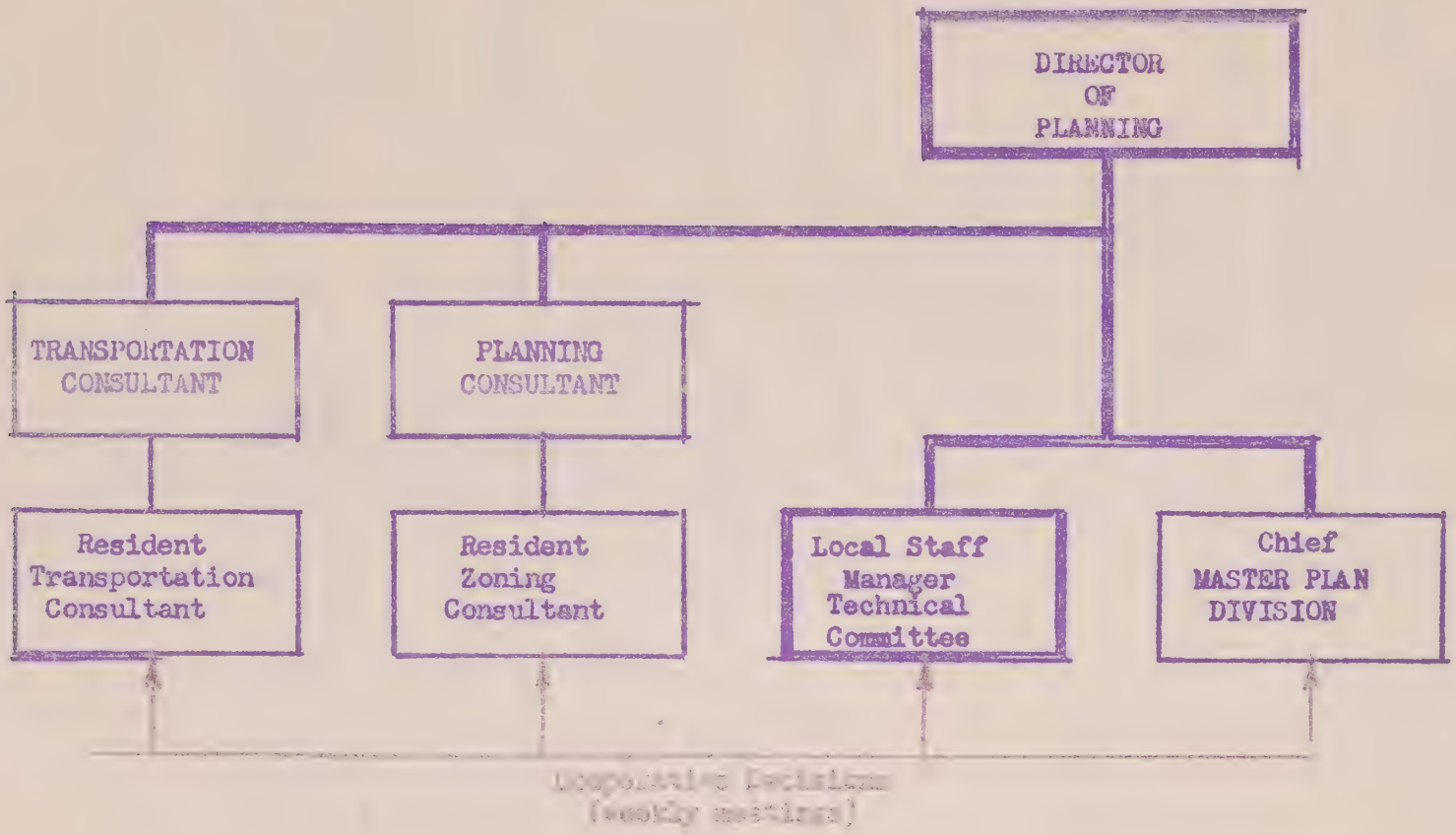
Coordination of Land Use and Transportation Planning

In order to obtain the objectives itemized above it is essential that, before the transportation plan is prepared, the land use planning be carried to a point where the land use boundaries are defined for the major social and functional areas. The problem consists primarily of (1) organizing the city into function areas practicable for detailed planning and (2) establishing a city wide generalized plan for land use. In general, the major land use pattern should be the dominant factor controlling the location of transportation routes through and within a city.

Perhaps the best approach to the problem would be to carry on land use and transportation planning simultaneously--such was the case in San Francisco during the productive years of 1947-48. The importance of co-operation with other governmental agencies during the land use planning processes cannot be overemphasized. In addition to the direct co-ordination with the transportation planning process (see Chart VII) the land use planning staff processed public improvement proposals, known as referrals, from many other city departments (for example: parks, schools, etc.)

COORDINATION OF LAND USE
AND TRANSPORTATION PLANNING

November, 1947 to July, 1948



Source: Syd ney H. Williams

Process for the preparation of the
LONG RANGE LAND USE PLAN
in San Francisco

Land use planning, because of the overwhelming complexity of large modern cities, is essentially a trial and error process. The city is first organized into major functional areas. Then as the numerous components become crystallized they are fitted into the general framework. The graphic summary of the land use planning process, shown below, should be interpreted as one round in a series of successive approximations. The planning staff was well into the analysis stage before all phases of the basic data stage was complete.

AN OUTLINE

I. BASIC DATA

A. Population:
- Estimates of growth
- Past and present distribution
- Future distribution
- Special composition studies

B. Economic Base:
- General economic trends
- Relative importance of activities
- Occupations and incomes
- Taxation
- Trade areas and markets

C. Land Use:
- Past and present uses
- Land use trends
- Real property inventory
- Population density
- Building coverage

II. ANALYSIS

A. Delimitation of Living and Working Areas
B. Organization of Areas.

Living Area

(1) Preliminary division into communities.

(2) Analysis of present and probable future population of these areas.

(3) Study of proposed communities with regard to: community facilities, boundaries and natural features, transportation and parking.

(4) Readjustment of community boundaries to satisfy established criteria.

(5) Tentative neighborhood units established following procedure similar to those used in defining community areas.

Working Area

(1) Preliminary division into working area districts.

(2) Analysis of activity requirements: working population, locations, sites, structures, services.

(3) Study of anticipated growth or decline of activities in each district including estimates of absorption of land.

(4) Evaluation of present locations: relation to services and adjacent activities, effect of future expansion, vacant areas, areas requiring redevelopment, activities requiring relocation.

The Generalized Land Use Plan

The generalized land use plan developed in San Francisco is based on the concept that areas for the major production-service (working area) should be separated from the area where people have their homes (living area). These to major functional divisions of the city, although dependent on each other, contain activities that are by their nature incompatible if mixed indiscriminately. It is fortunate that San Francisco, because of the form of its topography, has tended to develop in such a manner that these two parts of the city are relatively clearly defined and in many cases separated by steep hillsides. With these two major functional areas defined it is then necessary to develop the best possible organization of landuses within them.

Living Areas

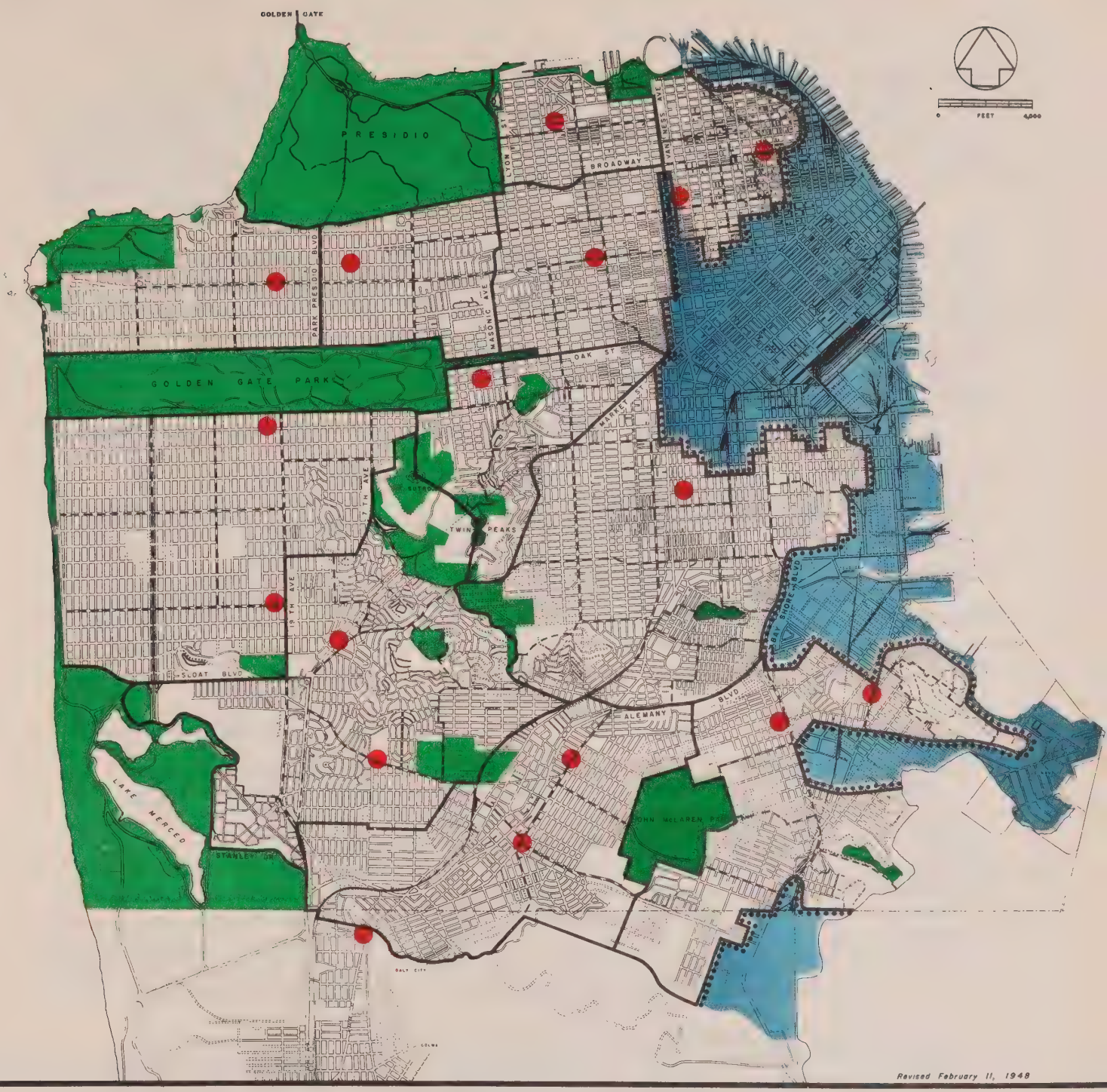
In the living area land-use planning is based upon the concept that this portion of the city will best fulfill its function if developed as a number of individual community areas within the city, with each community further divided into neighborhoods. This kind of organization has tended to develop in San Francisco because of topography and large public areas like Golden Gate Park. It is the purpose of the plan to reinforce this tendency.

The definition of community areas and neighborhood units will establish a frame of reference for more detailed land-use planning. The logical plan with definite community and neighborhood boundaries will aid analysis and planning since it will then be possible to tabulate how many people live within each community, their population composition, and their collective needs for community facilities.

It will also be possible, then, to influence the location of lines of transportation so that they will not split community areas and neighborhood units. A proper plan for neighborhood units and community areas will make it possible to locate freeways and major streets so that people are able to carry on their daily activities with little necessity for crossing heavy traffic and at the same time provide the city with an efficient transportation network.

Communities

The living area of San Francisco has been divided into twelve community areas, each of which is further divided into neighborhoods. Within each area the land use plan provided locations for the major facilities, both public and private, that are necessary for the convenience and well-being of the residents of the community, including a community shopping center, high schools and the larger recreation areas.



TENTATIVE COMMUNITY AND NEIGHBORHOOD BOUNDARIES

REVISION OF THE LAND USE SECTION OF THE MASTER PLAN — JANUARY 1948

MAJOR LOCAL SHOPPING CENTERS

COMMERCIAL & INDUSTRIAL AREAS

LARGE PARKS & INSTITUTIONS

LIVING-NON LIVING BOUNDARY

COMMUNITY BOUNDARY

NEIGHBORHOOD BOUNDARY

SAN FRANCISCO CITY PLANNING COMMISSION

Steep hills, bodies of water, canyons, and areas otherwise unsuitable for intense development, create natural boundries between communities. In addition to these, there are certain man made barriers: major commercial centers, major industrial areas parks and recreation areas of city wide importance, major thoroughfares, and large institutions.

The population of the community must be large enough to support necessary community facilities. Most important factor in this regard is the population required to support a high school. In San Francisco at present this ranges between 38,000 to 117,000 people depending on several factors: (1) Desireable maximum and minimum high school enrollments, (2) The ratio of children of high school age to total population, and (3) The portion of high school age children actually attending school.

The location of separators are the most significant factors in fixing the boundaries. Other factors influencing the shape and fixing boundaries are the normal lines of travel and habits of people. The shape of the community must also be desirable from the standpoint of design. Theoretically all parts should be equidistant from the center. This theoretical shape must be modified to meet conditions such as topography and already existing development.

Neighborhoods

The neighborhood is a subdivision of the community: a small unit that centers around the elementary school. Other factors that end to unify the neighborhoods are shopping centers, playgrounds, churches, neighborhood improvement associations, local Parent-Teacher Associations and personal contacts and friendships. The factors that definitely define one neighborhood from another are similar to those that divide communities, but may not be such large or dominant features. As in the case of the communities, habits of people and the travel routes they normally use are important factors in fixing neighborhood boundaries.

The population should be a sufficient size to support the neighborhood facilities. This means in San Francisco a range of from 2,500 to 14,000 depending upon school enrollments and age compositions in various parts of the city.

Working Areas

In the working area major land uses that must be accomodated are the port and related uses, industry, both ligh and heavy, warhouses, transportation terminals, the metropolitan shopping center, the financial district, and certain amusement, cultural and recreational activities.

Just as the living areas are divided into communities to establish a framework for more detailed planning it is convenient to divide the non-living into working area districts. These districts provide a basis for analysing the working area activities in regard to geographical relationships. The types of activities, their distribution, and their individual and collective needs can be tabulated within each district. In this manner the location of transportation, terminal facilities, and services can be planned to serve the working activities to their advantage and with the minimum of interference to the city as a whole.

Working Area Districts

Working districts are areas within a city which contain reasonably homogeneous activities and/or are separated by definite physical boundaries such as living areas, topography, transportation routes, etc. They are laid out to contain practicable planning areas, (enclosing an area corresponding roughly to that of communities).

The greater diversity of activities found within the existing working areas makes it impossible to set up such definite criteria as the population and geographical factors which define community areas. The high school, the shopping center, the community facilities, all act as points of focus in the living area; but no such definite focal points exist in the working areas. The delimitation of working area districts is based upon a study of the individual areas and activities involved. The non-living areas of San Francisco has been divided into four distinct working area districts:

District W: Made up of a number of functional concentrations, this area encompasses the central business district on both sides of Market Street and extends to the north. It includes the civic center, auto row, the theater district, the produce center, and the northern docks and warehouses.

District X: This area, known as the "south of Market" district, contains a relatively homogeneous mixture of commercial, wholesale, warehouse, and light industrial uses.

District Y: This area, north of Islais Creek, is the primary industrial section of San Francisco.

District Z: South of Islais Creek, this area contains light and heavy industries. This district includes Hunter's Point, and the industrial uses concentrated at the intersection of Third and Bayshore.

These four working area districts were divided up into what might be called special study areas. Some of these, such as the civic center, the apparel city, and the central business district

are distinct identities and are maintained as planning areas. In other sections of the working area, the subdivision must be arbitrary where no such distinct functional characteristics exist.

Conclusion

The land use plan thus proposes an organization of the city with two major functional portions--the residential area and the production-service area--with a rational relationship between these areas that will provide a combination of economic opportunity and pleasant living.

This long range plan serves as a goal to be approached in from 15 to 25 years. It acts as a policy for all planning activities directed towards effecting the plan such as revising zoning ordinances and the programming of public works.

TRAFFIC AND TRANSPORTATION STUDIES

Introduction

The descriptive material given in this section of our report is taken from the Transportation Plan For San Francisco, and it is used to supplement the techniques used in preparing the long-range transit and trafficways plan, described latter.

The traffic surveys available were the most comprehensive ever made for the City and County of San Francisco. The most important survey was the origin and destination survey, often refered to as the O and D survey, conducted by the California Division of Highways in cooperation with the Public Roads Administration, the City of San Francisco, and other cities within the Bay Area Metropolitan Traffic Survey Area.

The home interview method through which these data were collected is a relatively new technique but has been well established. Though costly, this method of collecting data is justified by the need of accurate information to insure the best design and location of expensive vehicular and public transit facilities required to meet modern traffic demands.

Description of Origin and Destination Survey

The survey area covered both sides of San Francisco Bay--107 square miles on the East Bay side and 51.1 square miles on the San Francisco side. The San Francisco, including Daly City and Colma, was divided into subdivisions for the convenience of handling as follows: 10 Sectors, 73 Segments, 338 Zones, and 525 Subzones.

The subdivisions utilized mostly in these studies were zones in the San Francisco Metropolitan Traffic District and segments outside the Metropolitan Traffic District.

The basic data were collected by carefully controlled interviews classified into two broad phases--internal and external.

For the internal survey a study of Sanborn maps was made supplemented by a field survey of new and temporary construction to determine the number of residences in each individual zone. Interviews were then made at 5 percent or one out of every twenty homes in each zone. This procedure resulted in 27,700 home interviews. Specially trained interviewers questioned occupants concerning the details of all trips made by all members of the sample household for the previous day. The interviews were only conducted on Tuesdays through Saturdays, giving a typical weekday pattern. One out of seven taxi drivers and truck drivers, approximately 15 percent, were interviewed, resulting in inter-

views with drivers of 226 taxis and 7,160 trucks.

The external survey of persons living outside of the survey area was conducted by interview at roadside stations on the boundary of the survey area. A total of 15 roadside stations were set up, of which seven were on the San Francisco side of the bay. The San Francisco-Oakland Bay Bridge being within the survey area was not an external station although for the purpose of this report, that is the Transportation Report, trans-bay traffic was considered as external traffic.

The data collected in the field were expanded in such a manner as to develop typical weekday travel between all external stations and the several segments and zones in the survey area as well as between all these internal areas. These data were recorded on cards and the summaries required for various studies produced by IBM tabulators.

The data collected from the O. and D. surveys made it possible to learn where people go, the time pattern of travel, the trip purposes and modes of transportation. Knowledge of these facts provided the basis for selecting route locations to best serve the traffic needs of the area. Estimates could also be made of the traffic volume which will use the various sections of the proposed routes and access facilities.

The movement of vehicles and passengers was divided into four principal classifications as follows:

1. Station to Station--Those trips which went directly from one external roadside interview station to another station without stopping within the area.

2. Station to Segment--Trips from roadside stations to segments within the area and reverse.

3. Segment to Segment--Trips within the area between segments.

4. All mass (passenger) transportation trips.

No O. and D. data were collected by the BAMTS survey pertaining to external public transit traffic, and, therefore, a postcard survey of persons entering and leaving the three Greyhound Bus Terminals and the Southern Pacific Railroad Terminal was conducted by the four city departments and the consultants. This survey was made between 7:00 A.M. and 7:00 P.M., on Jan. 20 and 21, 1948. A total of 21,516 cards was distributed, of which 6,374 or 29.6 percent were returned. These data were expanded to a typical day and correlated for use with data from the BAMTS survey.

Cordon Counts

Two cordon counts of traffic entering and leaving San Francisco's Downtown Area were made. The Central Business District Cordon (inner cordon) was conducted by the California Division of Highways on the same limits as the cordon made for the San Francisco City-Wide Traffic Survey in 1937. The data obtained covered vehicles and did not include passengers. Fifty-eight stations at 34 locations were counted by half hour periods from 7:00 A.M. to 7:00 P.M. in Jan. and Feb. 1948.

The Metropolitan Traffic District Cordon Count was conducted by the four city departments and the consultants over the much larger area included within the Metropolitan Traffic District. This count was made during the last five days in Oct., 1947, for 121 stations at 66 locations. Data were recorded by half-hour periods between 7:00 A.M. and 7:00 P.M. An actual count of all vehicles, pedestrians, and mass transit passengers was made at all stations. Spot checks of vehicle occupancy were also made at 10 locations to determine the total number of persons entering and leaving the cordon area.

Volume Counts

Traffic counts on major traveled streets were made by the California Division of Highways during 1947. Where practical, mechanical counters were used to make 24-hour counts, half-hour readings being taken during the peak period from 4:00 P.M. to 6:00 P.M. Detailed manual counts to determine the peak hour flows were also made within the Metropolitan Traffic District, in Jan. and Feb., 1948.

Checks of public transit passengers were made available by the Municipal Railway. These data were supplemented by data on the existing passenger flow pattern of the transit system of a city-wide basis.

Speed and Delay Studies

Vehicular speed and delay studies were made by both the California Division of Highways and the four city departments. Portions of over 30 major streets were studied and the data were combined to provide figures for approximate speeds over existing city streets. These studies were made for both peak and off-peak periods of normal weekdays during the month of May, 1948.

Transit travel times and speed data were made available by the Municipal Railway and were supplemented by additional running time checks made by the Technical Committee staff.

Special Surveys

Through travel studies to determine what numbers of vehicles traveled long distances along certain important arteries and what percent turned off after short trips, were made on normal weekdays in May, 1948, for Market, Van Ness, Post, Third, Fourth, and Howard Streets.

Boarding and alighting studies of the 40 Line and H Line for a full typical day were made in connection with special transit studies.

Condition, signal, accident, and traffic volume studies were made for the forty intersections with the highest accident experience during 1947. Special condition, signal, volume, speed, and accident studies were made of Market Street and 17th Street to the Embarcadero to provide a basis for a sound functional traffic plan for Market Street.

TRAFFICWAYS PLANNING AND ENGINEERING TECHNIQUES

Basic Data

Basic data utilized in planning trafficways consisted of analytical studies described elsewhere in this report: the origin and destination study, Cordon counts, and through traffic studies. Few of the proposals on trafficways were entirely new, but were based on previous transportation studies which were reviewed and weighed in light of existing information on traffic requirements, existing and desirable future city development, technical advances in highway design and a functionally sound overall pattern.

Some of the past studies used included the State Division of Highways' plan for the Bayshore Freeway and preliminary plans for a parallel crossing, and a northerly extension of the 13th Street approach to the Bayshore Freeway across Market Street. Also of benefit was the 1945 Marginal Freeway Report and, more valuable, the March, 1947 report and interim plan prepared by the Technical Committee of the Mayor's Administrative Transportation Planning Council. Thoroughfares proposed in the latter plan were verified and incorporated in the report.

Basic Assumptions

Assumptions made for the entire study which were of primary importance in planning trafficways included those on land use, future car ownership, and projection of traffic volumes.

Prospective ownership of motor vehicles was based on the assumption that the trend of increase of cars per capita would continue, with San Francisco tending to reach the California ratio. It was estimated that by 1970, the total registration in the nine Bay Counties would be 1,500,000 vehicles, with 320,000 of these in San Francisco proper. These figures represent a 50 percent increase in San Francisco, and a 90 percent increase in the nine Bay Counties.

Projections of future traffic volumes carried to 1970 were based on population growth, increase in vehicle registration, possible decentralization, improvements in the transit system, limitation of street capacity and parking facilities in the Metropolitan Traffic District.

Population of San Francisco proper was estimated to increase 12 percent between 1947 and 1970. Population estimates of the contiguous portion of the metropolitan area beyond the south city limits and across the bay were made by local planning departments, based on building sites, present trends, known plans

for industrial expansion, and other pertinent factors. This information was invaluable later in the study in assigning future traffic to each of the freeway routes.

The assumption was made that proposed freeway routes should be planned to include certain volumes of traffic that would be induced to use the system through savings in time even though overall distances would be somewhat longer. Provision was made also for increased use of vehicles due to improved facilities. Continued use of good streets and surface thoroughfares recommended for improvement were also considered.

Major Considerations

Major considerations in planning trafficways included proposed land use, topographic features, existing major routes, projection of traffic and traffic origins and destinations, and comparative costs.

Land use, including major areas, probable and desirable future growth of the Central Business District, and neighborhood and community patterns, are described elsewhere in the report.

Existing trafficways were given thorough study in order to utilize them to best advantage as feeders or supplemental routes. Since the State highway pattern also serves local needs in San Francisco, it was found necessary to integrate this system with the other trafficways.

Land costs were determined on existing assessed valuations to which factors were applied as recommended by city real estate experts to produce existing market values. Construction costs were also estimated at existing levels.

Objectives and Other Considerations

Major transportation planning objectives are stated in the section on land use. Other considerations included:

1. That there is a definite limit in San Francisco to the amount of land available for private use which represents the tax base of the city (25% of all land in the city is now occupied by streets; 22% for other public purposes.

2. That the available land is used intensively and therefore has a relatively high value compared to many other large American cities.

3. That there is an understandable resistance to further extensive land aquisitions for public use, especially in existing residential areas.

4. That further widening of major city thoroughfares should be avoided and that additional traffic capacities should be gained through the construction of more efficient freeways located away from high value developments.

5. That the city will have only limited funds for trafficway improvements.

6. That state and federal funds should become available for certain types of urban highways, especially freeways.

7. That the only direction in which San Francisco can grow by land is down the Peninsula through Daly City gateway.

8. That two additional Bay crossings will have certain effects on the growth of San Francisco and its traffic pattern.

Basic Standards

Basic standards on location and design adopted by the American Association of State Highway Officials were used, along with California's higher standards on verticle clearances.

Procedure

The procedure was to develop two general plans for freeways, one by the City Engineers and one by the Department of City Planning. The latter was developed on a theoretical basis, without reference to traffic data. Analysis of the origin and destination survey indicated that a number of major desire lines of travel existed in San Francisco. The concept employed was to establish a relationship of these desire lines with patterns of land use, and integrate the system with the State highway pattern.

The City Engineers proceeded from a general engineering standpoint, including the study of existing highways and major routes as they might fit into the freeway system, and also the topographical limitations.

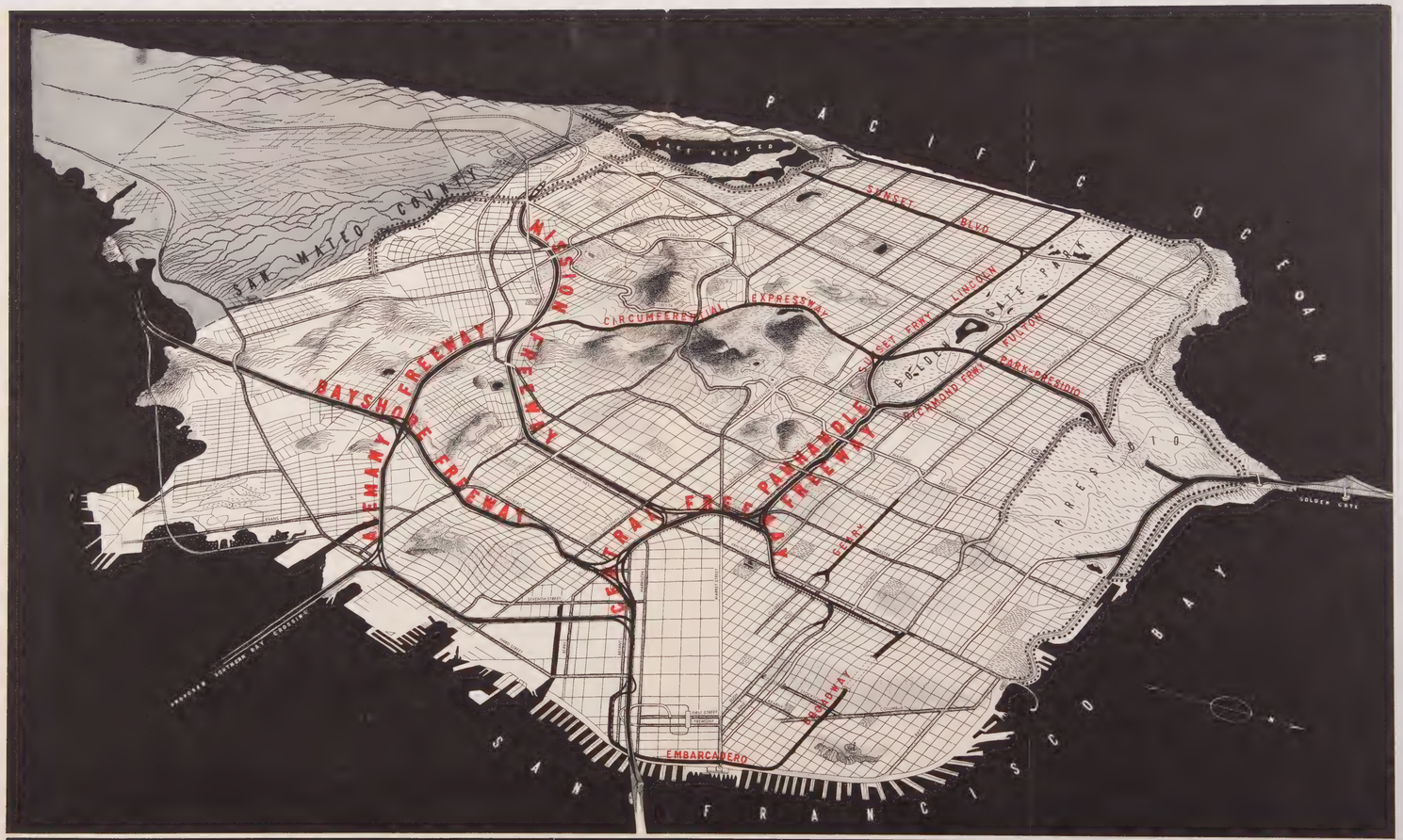
After the two preliminary patterns had been established they were tested for future adequacy by application of the origin and destination study material, which had been adjusted according to assumptions on future population distribution, increased car ownership, and traffic volumes. Adjustments were made for each segment used in the original study, and estimated traffic in each segment was assigned to the major trafficways. In many instances the total figure for a given segment would be divided and assigned to more than one route, depending on that portion of the overall pattern affecting the given segment.

A compromise was then made between the two plans. In

coordinating them, it was found that the land use and topography factors necessitated the major adjustments. Patterns of land use were of primary importance in making final determinations.

Recommended priority of construction and the number of lanes provided in each freeway section was determined in large by the estimated 1970 two-way movements of traffic by sections and on access ramps. No detailed suggestions were presented for stage construction of the other improvements, although certain improvements to be made along with each freeway construction stage were suggested for the consideration of the Department of Public Works with the approval of the Mayor and Board of Supervisors.

Where anticipated traffic volumes would not justify full freeway construction and yet would be large enough (about 15,000 to 20,000 cars per day), recommendations were made for expressway development. These thoroughfares provide for faster and safer than normal traffic movement and for high capacity through special traffic control, grade separations at main cross thoroughfares, reduction in the number of cross streets, and other devices. Other trafficways recommended for development included major thoroughfares, secondary thoroughfares and parkways.



DE LEUW, CATHER & CO., CONSULTING ENGINEERS
LADISLAS SEGOE, CONSULTING CITY PLANNER

TRAFFICWAYS 11 PLATE 9

SAN FRANCISCO DEPARTMENT OF CITY PLANNING

AIRVIEW OF CITY SHOWING TRAFFICWAYS

FREEWAYS
EXPRESSWAYS
PARKWAYS
MAJOR THOROUGHFARE
SECONDARY THOROUGHFARE

Introduction

This section of our report is concerned chiefly with the description and analysis of the planning and engineering techniques used in preparing the long-range local transit plan. For a full description of the surveys discussed below, reference should be made to the section of this report--Traffic and Transportation Studies. No attempt is made to discuss the inter-city plan, also proposed in the Transportation Plan for San Francisco.

Before a long range plan could be developed it was felt that a first-stage plan, largely covering the modernization of the present transit system, was essential.

Techniques Used in the First-Stage Plan

1. A tentative plan evolved based on studies of (a) topography, (b) passenger volumes on individual routes--both rush hour and non rush hour, (c) line characteristics, (d) present schedules, (e) major thoroughfares, (f) vehicular traffic characteristics, (g) population distribution, (h) commercial and industrial concentration, and (i) present and probable future land uses.

The objective was to provide a route pattern which would keep to a minimum walking distances from points of origin and points of destination to the transit lines and procure satisfactory frequencies of transit service.

Studies were based on first class standards defined as seats-for-all except during rush hours when standees would be limited to 50 percent of passengers seated.

2. Estimates of passenger volumes were made on several new routes of the proposed system based on the State Highway O. and D. survey of 1947, together with the population distribution of 1947, as estimated by the staff of the Planning Commission. Desire lines were plotted to show transit passenger volumes as they would exist if the passengers could proceed in a straight line between origin and destination of trip. These estimates were limited to traffic determination for a typical weekday at 1947 traffic levels.

3. Hourly distribution of passenger volumes was determined, based primarily on counts made by the Municipal Railways' Schedule Department, during 1947, and in some cases 1946. These data were supplemented by Oct. 1947 Cordon Count data, the cordon lines conforming closely to maximum points of loading. Special boarding and alighting counts were made to determine loadings

on some outlying routes.

As well as load ratios of passengers per seat for various hours of the day, the cordon count provided a measure of the trend of total daily passengers traveling in and out of the business district, through comparisons with 1926 and 1937 cordon counts.

4. Weekday schedules were determined on the basis of the surveys discussed above and the application of new and improved loading standards. Speeds on new routes were based on present operation of similar equipment on comparable thoroughfares.

5. Car and bus hours were figured on a basis of estimated running time with present allowance for layovers. Pay rates and car and bus hours were based on analyses of present operations with allowances made for (a) pull-in and pull-out time, (b) ready time, (c) put-away time, (d) report time, (e) travel time, (f) time for relief, and (g) other allowances required by present labor agreements.

6. Studies were also made to determine operating costs and the types of equipment, but since these were not directly concerned with the determination of the plan or concerned planning and engineering techniques, no space is given to them in this report.

Techniques Used in the Final Plan

After completion of the first-stage plan the final plan was based upon a series of tests to see if the first-stage plan would take care of long-range transit demands. Advantage was taken to properly utilize facilities proposed in other parts of the transportation plan. Proper adjustments were made to handle increased passenger volumes.

1. Based on previous studies in other cities a ten percent increase in transit passenger volumes was assumed. This figure is rock bottom, some cities having estimated as much as 50 percent.

2. Using the O. and D. transit survey and resident and working population distribution estimates people were assigned to different proposed transit lines. An estimate of the number of riders to be handled was found at various intervals on each line.

3. Estimates were also made of the number of people who could be served by the proposed subways and the freeway plan.

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